

## 5 Management Plan Objectives and Methods: 2007-2017

### 5.1 Land Protection

#### 5.1.1 Land Acquisition

##### 5.1.1.1 1985-2006 Land Acquisition Program

The three active Division watersheds have been included in the land acquisition program since its inception in 1985. While a preponderance of the available acquisition resources have been used to acquire acreage on the Wachusett Reservoir watershed (highest priority), sensitive lands have also been protected on the Quabbin Reservoir and Ware River watersheds. The purpose of the land acquisition program is to acquire sensitive watershed land and to protect it from urbanization and then to restore and/or maintain stable forest cover on this land. Few sites already developed or significantly disturbed are acquired. Instead, relatively undisturbed lands are purchased as a preventative measure, countering potential threats to water quality that would result from development of these lands.

To help determine which parcels would provide the greatest water quality protection for the money spent, the former MDC/DWM developed land acquisition models, first for the Wachusett and then, in 1998, the Ware River watershed. Land in and around tributaries, aquifers, and wetlands will contain the greatest proportion of a basin's water at any given time. Studies of small New England watersheds emphasize the importance of low lying, water-rich areas in contributing the majority of runoff during storm events through saturated surface and subsurface flow (Dunne and Leopold, 1978, and Hewlett and Nutter, 1969). As a precipitation event continues, the area contributing to saturated flow increases. It is believed that this "variable source," however severe the storm event, includes less than half the watershed area. Pollutants introduced to these water-rich sources are more likely to impact tributary water quality than those introduced on non-source areas.

#### Land Protection Highlights:

1. The Commonwealth, from 1995 to 2004, has acquired 368 acres for watershed protection on the Quabbin watershed, bringing the total holdings to 54,311 acres.
2. **Payments in lieu of taxes** for Quabbin watershed towns are approaching \$1.8 million/yr
3. **DWSP technical assistance to landowners and communities** aids watershed protection efforts. Since 1995, 5,323 acres of private forestland were enrolled in Stewardship via \$63,058 of DWSP funding, about \$1/acre/yr.
4. The 160 miles of **boundary** associated with the DWSP Quabbin holdings are maintained every 10 years. The 289 acres of utility rights-of-way are subject to site-specific controls and utilities are required to submit 5-year and yearly plans for their management.
5. Seven **Watershed Rangers** are assigned to Quabbin/Ware River and tasked with rules education and pro-active surveillance patrols, as well as emergency response for both legal and illegal access to the DWSP properties. Domestic animal and human trespass are the most common interventions.
6. **Wildfires** occur 2-3 times per year at Quabbin and are generally held to less than 10 acres in size. The local Fire Chief directs DWSP crews, who have received regular training in fire control. Fire fighting equipment upgrades and maintenance of access roads provide further improvement in Division fire response.
7. **Watershed security** received additional focus after the events of September 11, 2001 and the Bioterrorism Act of 2002 required Vulnerability Assessments, delivered for Quabbin in September 2003. Among the changes are the closing of sensitive access points, background checks for research permits, better gate management, among many others.

Protecting large tracts of land in a small state like Massachusetts is not easy. Massachusetts has the third highest population density in the country and developmental pressures and competing uses for open space areas are high. The biggest threat to biodiversity in Massachusetts is fragmentation of habitat caused by development. Land conservation is an important tool in dealing with water conservation, biodiversity and habitat protection, and open space fragmentation.

Unlike the Wachusett and Ware River watersheds, the Quabbin watershed has not yet been modeled to determine land protection priorities. DCR control of Quabbin watershed acreage stands at 56.9% - much higher than the other active watersheds. Rather, Quabbin subwatersheds have been prioritized for land protection decision making. **Table 34** shows these subwatersheds and their current protection levels for both DCR lands and other protected open space.

**Table 34: Open Space Protection in Quabbin Basins with Acquisition Opportunities**

<b>Subwatershed</b>	<b>Total Acres</b>	<b>Total Open Space</b>	<b>DCR Controlled</b>	<b>Other Open Space</b>	<b>% Protected</b>
West Branch of Swift River	14,845	10,427	9,012	1,415	70.2
Fever/Hop Brooks	21,158	15,110	12,986	2,124	71.4
East & Middle Branches of Swift River	34,761	13,220	6,977	6,243	38.1
<b>TOTAL</b>	<b>70,764</b>	<b>38,757</b>	<b>28,975</b>	<b>9,782</b>	<b>54.8</b>

Source: DCR/DWSP, 2007

From 1995 to 2004, the Commonwealth has acquired, for watershed protection, 368 acres on the Quabbin watershed, bringing the total holdings to 54,311 acres, or 56.9% (up from 54.3% in 1985) of the watershed. Expenditures for this acreage total \$1.292 million. Funding for the watershed land acquisition program since 1985 has come from the 1983 Open Space Bond (\$3 million); the 1987 Open Space Bond (\$30 million); and the Watershed Protection Act of 1992 (\$135 million).

As DCR/DWSP pursues new land acquisition funding options, DWSP will concentrate on purchasing land on the Wachusett watershed, which is the least protected basin, with 26% under Division control. Efforts will continue, however, toward purchasing a number of previously identified key parcels throughout the Quabbin Reservoir and Ware River watersheds.

#### **5.1.1.2 Future Land Acquisition Objectives**

Future land acquisition in the Quabbin Reservoir watershed is expected to be limited and very selective, given the expected available funding and the fact that much of the watershed is already protected lands. Particular emphasis will be given to projects that address the acquisition of inholdings in order to consolidate boundaries, and conservation restrictions on prioritized parcels that, when protected, will prevent adverse changes in land use considered a significant threat to water quality by the Land Acquisition Panel (LAP). Gifts, bargain sales, and partnering opportunities in land acquisition will contribute to a more favorable prioritization status.

The Quabbin watershed is divided into three priority zones for land protection, based on travel time data (pollutant fates), and proximity to aqueduct intakes. The primary zone is the West Branch of the Swift River. The secondary zone is the Hop Brook, Fever Brook, and Middle Branch tributaries. Tertiary status is given to the East Branch of the Swift River.

#### **5.1.1.3 Payments In-Lieu of Taxes (PILOT) Program**

##### **5.1.1.3.1 PILOT Program Description and Legislation**

The DCR Division of Water Supply Protection, Office of Watershed Management PILOT program annually monetarily compensates the communities that contain the land and water bodies that comprise one of the nation's largest unfiltered water supply systems. The Payment in Lieu of Taxes program guarantees regular and stable payment to 31 communities (see **Table 35** for the 11 towns within the Quabbin Reservoir watershed).

The PILOT program is mandated by Massachusetts General Laws ch. 59, § 5G . This legislation updated old payment laws MGL ch. 59, §§ 5D-5F, which were written in the 1940s, and did not value lands in all communities currently entitled to payments. The current PILOT law was first ratified in 1984 for the Quabbin Reservoir and Ware River watersheds. The law was amended in 1987 to include communities in the Wachusett Reservoir and Sudbury Reservoir watersheds.

#### **5.1.1.3.2 PILOT Funding**

Money for the Office of Watershed Management PILOT program comes from the Massachusetts Water Resources Authority (MWRA) rate payers who use the reservoir waters. They pay their water bills to the MWRA, which provides DCR with the funds needed to make the PILOT payment. DCR makes the annual payment in full to each community in the program. This program is solely for lands managed for drinking water supply by the Office of Watershed Management. All other state-owned lands that are eligible for payments in lieu of taxes under MGL ch. 58, §§ 13-17 are reimbursed, subject to appropriation, by the legislature through state aid to municipalities (the “cherry sheet”).

#### **5.1.1.3.3 PILOT Amounts**

The Department of Revenue (DOR) revalues state-owned land every four years. The most recent DOR revaluation assessed all property owned in-fee by the Commonwealth as of 1/1/2005. The revaluation takes into account all lands purchased by the state over the previous five years as well as any changes in land values. The new values took effect in FY2006.

The PILOT amount is determined by multiplying the Department of Revenue valuation of DCR Division of Water Supply Protection land by the highest local property tax classification (regardless of actual land classification). Most PILOT land is forested, but the PILOT calculations use the same rate structure as commercial or industrial property. Legislative provisions state that the Office of Watershed Management PILOT payment can never be less than that of the previous year, even if the value of the land or tax rates decrease.

DCR works diligently with the watershed communities, MWRA, and DOR to comply with the PILOT law. **Table 35** demonstrates that the PILOT program provides substantial revenue to the watershed communities. MGL ch. 59, § 5G also dictates that five Quabbin Reservoir watershed communities (Belchertown, Hardwick, New Salem, Pelham, Petersham and Ware) receive a second payment for lands annexed from the disincorporation of the former towns of Dana, Enfield, Greenwich, and Prescott. The amount received from this second payment totaled \$429,360 in FY2007, representing 31% of the total PILOT received by these five towns. The 2007 “Independent State Auditor’s Report on the Department of Conservation and Recreation and the Massachusetts Water Resources Authority Compliance with Watershed Agreement Requirements” (Commonwealth of Massachusetts, Auditor of the Commonwealth, No. 2007-0276-3C, Boston, MA August 2007) specifically noted that “there is no apparent reason for making PILOT payments twice for the same piece of land,” however any change in this payment process will require legislative action. Legislation was proposed in January 2007; however at the time of publication no final action has occurred to amend the PILOT law.

**Table 35: Payment-in-lieu of Taxes FY05-FY06, Quabbin Reservoir Watershed Communities**

<b>Community</b>	<b>PILOT FY2005</b>	<b>PILOT FY2006</b>	<b>% TOTAL PILOT<sup>+</sup></b>
Barre	\$129,668	\$129,668	2.2%
Belchertown*	\$170,786	\$171,883	2.9%
Hardwick*	\$54,761	\$54,761	0.9%
New Salem*	\$264,481	\$264,481	4.5%
Orange	\$3,286	\$3,286	0.1%
Pelham*	\$162,276	\$186,864	3.2%
Petersham*	\$338,978	\$338,978	5.7%
Phillipston	\$7,067	\$7,067	0.1%
Shutesbury	\$250,019	\$250,019	4.2%
Ware*	\$320,224	\$320,224	5.4%
Wendell	\$16,247	\$16,247	0.3%
<b>Total Quabbin Watershed</b>	<b>\$1,717,793</b>	<b>\$1,743,478</b>	29.5%
<b>Total PILOT<sup>+</sup></b>	<b>\$5,076,573</b>	<b>\$5,919,709</b>	

Source: (DCR/DWSP, 2006)

\* Includes payments for land annexed by town after disincorporation of communities for Quabbin Reservoir.

<sup>+</sup> Distributed to 31 communities in the Quabbin Reservoir, Ware River, Wachusett Reservoir, and Sudbury Reservoir Watershed Systems

#### **5.1.1.4 Land Disposition Policy**

DWSP regularly comes under pressure from both private and municipal parties for disposition of parcels of its lands for purposes that may be inconsistent with drinking water supply protection. While there are certain areas of land ownership throughout the water supply system that may not be of critical importance to water supply protection, these areas require careful scrutiny prior to disposition. DWSP will consider land disposition only under exceptional circumstances for private or municipal uses. DWSP will not promote the use of watershed lands for purposes that are inconsistent with goals for water quality protection. The proponent of the disposition must demonstrate that resources of greater value will be protected either through acquisition of Article 97 land or through other means, so that the missions and legal mandates of DWSP are protected and enhanced.

The Watershed Land Disposition Policy, approved in April, 1998, provides a framework for the agency to properly discharge its obligations to protect the water supply and to protect the Commonwealth's broader interests in open space protection under Article 97 of the Constitution of the Commonwealth. The intent of the policy is to provide additional watershed-specific instructions to the Executive Office of Energy and Environmental Affairs on disposition of Article 97 lands. DWSP follows EOEEA's land disposition guidelines and DWSP is extremely stringent about agreeing to land dispositions and will pursue them only if the disposition can be a benefit to the Commonwealth and the protection of our water resources.

#### **Disposition Procedures**

1. All reviews of Article 97 land disposition requests by DCR/DWSP shall be consistent with *EOEEA Article 97 Land Disposition Policy*.
2. A written request shall be submitted to DCR/DWSP for disposition of a particular parcel.
3. If the disposition request is proposed by a municipality, it shall appoint a committee to initiate the DCR/DWSP review process.

4. DCR/DWSP shall provide copies of EOEEA and DCR/DWSP Article 97 land disposition policies to the proponent and, if applicable, to members of the municipality's appointed committee.
5. The proponent shall submit an EOEEA-approved Open Space and Recreation Plan (M.G.L. c.41 §81D) to DCR/DWSP.
6. Alternatives to disposition of the Article 97 land shall be evaluated for prioritization based on their impact on the water supply, criteria provided by DCR/DWSP and the municipal committee, and local interests. DCR/DWSP staff may provide guidance to the municipal committee, if possible.
7. The proponent shall comply with the requirements of the Massachusetts Environmental Policy Act (MEPA) as it relates to disposition of Article 97 land. This includes requirements for disposition of parcels of two acres or more, and those proposed uses which would have significant traffic impacts (M.G.L. c.30 §61-62).
8. The proponent shall comply with all applicable state and federal laws and regulations, including the state and federal Rare and Endangered Species acts (M.G.L. c.131A, 16 U.S.C. §1531), Historic Preservation Acts (M.G.L. c.9 §§26-27C), Wetlands and Rivers Protection Acts (M.G.L. c.131 §40, 33 U.S.C. §1251, et.seq.).
9. The proponent shall demonstrate that resources of equal or greater size, resource value, and fair market value will be protected, as determined by DCR/DWSP and EOEEA, either through acquisition of additional Article 97 land or through other means, so that the missions and legal mandates of DCR/DWSP and EOEEA are protected and enhanced. Any disposition may affect future Payments In Lieu of Taxes (PILOT) to a municipality.
10. Upon receipt of all relevant documentation, DCR/DWSP shall review the disposition request. If approved, the request shall be forwarded to the DCR Lands Committee and the DCR Commissioner. The Commissioner has the jurisdiction over the disposition of DCR/DWSP managed lands, and has the authority to approve or overrule the recommendation of DCR/DWSP.
11. Following approval by the DCR Lands Committee and the Commissioner, the disposition request shall be sent to the Secretary of EOEEA and the Commissioner of the Massachusetts Division of Capital Asset Management (DCAM) for their approval.
12. Following approval by all required state agencies, the proponent shall provide a registered survey plan, including the metes and bounds of the parcel.
13. Any disposition, whether by lease or fee, shall include language which causes the land to revert to the Commonwealth if the land is not used for the approved purpose or the proponent does not adhere to the terms and conditions of the disposition agreed to by the proponent and DCR/DWSP. Any disposition shall include transfer of land of equal or greater size, resource value, and fair market value. If a disposition involves replacement real estate land of lower fair market value, the difference in fair market value between the replacement parcel and the subject parcel must be paid to the DCR Water Supply Protection Trust.
14. The proponent shall identify a legislative sponsor who shall submit Article 97 land disposition legislation for approval by the General Court.

## ***5.1.2 Protection of Private and Community-Owned Lands***

### **5.1.2.1 Conservation Restrictions**

In addition to direct land acquisition, DCR/DWSP has been protecting land within the watersheds by using cost effective conservation restrictions to protect land from development while simultaneously encouraging private landowners to continue to practice effective stewardship on their properties.

A conservation restriction (CR, also called a conservation easement) is a legal agreement a property owner makes to restrict the type and amount of development that may take place on his/her property. A property owner agrees to sell or donate limited rights to their property to a state agency or nonprofit land conservation agency. The landowner remains the owner and retains all rights to ownership except those described in the conservation restriction.

There are both conservation and monetary advantages to landowners who sell or donate CRs. Neither landowners nor the purchasing organization/agency of a CR can develop the land in ways prohibited by the deed. Furthermore, landowners are paid not to develop their property. After the sale of a CR, the property is assessed at a lower value due to its development restrictions, which in turn reduces the landowner's property taxes and possibly estate taxes as well. If the CR is donated for conservation purposes, it also generates an income tax deduction. Consultation with a qualified estate planner is strongly recommended by DWSP so that landowners clearly understand the specific benefits of a CR on their property.

Once recorded, a CR remains in effect for future owners should the landowner decide to sell the property. Future owners are bound by the restrictions within the CR. CRs are usually permanent and in order for a CR to qualify as a tax-deductible charitable gift, it must be granted in perpetuity. A popular alternative to putting an owner's entire property under restrictions is to work with the acquiring agency to survey the area to be placed under the CR, while excluding any area that the owner wants to remain unrestricted. Often the owner's house and outbuildings will be excluded from the CR.

DCR/DWSP pursues the acquisition of CRs as well as fee acquisitions for the purpose of water and watershed protection. There is no PILOT obligation to DCR from a CR because the land remains as private property. Each CR is tailored to the interests of the owner and DCR. It is the policy of DCR/DWSP to purchase CRs that will not conflict with water quality protection. Typical use restrictions include construction of buildings or utilities, septic systems, paving, dumping, excavating, mining, use of pesticides, storing hazardous materials, and certain agricultural purposes. Continued use of the property by its owners for forestry, wildlife, recreation and privacy purposes is encouraged.

Once DCR/DWSP purchases a CR, it assumes the responsibility for conducting a baseline survey of existing conditions. A staff person will photo-document the entire property, prepare maps and gather as much information about the property from the owner as possible. It is very important to document what uses were in effect at the time of the acquisition. Permissible uses are also generally transferred with new ownership when CR property is sold. In the spirit of conservation, DWSP will require that any items that may be inconsistent with the provisions of the CR be removed when land owners are able, such as junk cars, appliances, or other waste debris. A yearly inspection is conducted to ensure that the purposes of the CR are being maintained. DCR/DWSP will work with a landowner to help prevent negative impacts, such as abutter encroachments and unauthorized recreational access, and will also help provide technical assistance for managing these lands.

DCR/DWSP currently holds 54 CRs across the Quabbin, Ware River, and Wachusett watersheds. These CRs total 3,533 protected acres. Most CR owners are individuals. However DCR has also purchased CRs from sportsman's clubs, golf courses, and municipalities. There are 10 DWSP CRs, totaling 715 acres on the Quabbin Watershed.

### 5.1.2.2 Technical Assistance to Communities

In the Commonwealth of Massachusetts, municipalities have significant authority over land use and development. Towns are authorized to enact and enforce a variety of statutes, including zoning bylaws, subdivision bylaws, and overlay districts (such as aquifer protection bylaws). In addition, the state delegated partial authority for regulations such as Title 5 and the Wetlands Protection Act to municipal governments.

Volunteer boards, such as the local boards of health, conservation commissions, and planning boards, are responsible for these bylaws and regulations. Tasks that board members must perform include reviewing proposals, determining if the applicable standards are met, issuing approvals or permits, and supervising construction and other on-site compliance reviews. In many towns, especially small ones, there are few paid professional positions, and the boards may not have town staff to support them. Further, the board members may or may not have received training in that technical area. DWSP's community technical assistance program seeks to maximize the watershed protection afforded under locally delegated controls by offering its expertise and resources to support local officials' decision making.

DWSP historically has maintained contact with local boards through the review of major development proposals, construction site inspections, and other situations pertaining to compliance with state and federal regulations. Through these efforts, the agency has helped to address a range of water supply pollution sources, such as septic systems, sedimentation from construction, road drainage, stormwater runoff from residential area, and recreational field runoff. DWSP's involvement in local planning and environmental issues was greatly expanded with the passage of the 1992 Watershed Protection Act (WsPA). The WsPA specifically required a program of technical assistance to affected communities that includes, but is not limited to, "planning studies, and zoning bylaw studies, health bylaw studies and subdivision by-law studies" (Chapter 36 of the Acts of 1992, §15: regulations included in **Appendix II** ).

The DWSP Technical Assistance Program encompasses the following types of activities:

1. Growth management planning, master plans, and land use studies.
2. Review, revision, and development of by-laws, subdivision and other regulations, protective districts, and performance standards.
3. Refinement of local monitoring, review, permitting, and enforcement practices.
4. Design advice to municipal boards or landowners from natural resource, engineering, and planning professionals.
5. On-site reviews of proposed development projects with local board members and municipal officials.
6. Public education programs.
7. Applied watershed management research.
8. Technology transfer.
9. Coordinating program topics and audiences with other technical assistance organizations (such as watershed associations).

The Technical Assistance Program provides the watershed communities three different avenues to obtain help with their local land use regulatory needs:

1. **Board Communication:** Attendance at local board meetings is an effective way to foster good communication between DWSP and the watershed communities. DWSP presence offers both regulatory review and the opportunity to provide immediate technical assistance and, if need be, the recommendation for more in-depth consultation.
2. **In-House Projects:** There are some instances where a town requires more than a conversation to help with a project. In cases where DWSP staff have time and resources, the agency provides in-

house support. Projects that the Quabbin Environmental Planning staff have worked on are included as **Appendix V**.

3. **Technical Assistance Contracts:** There are many land use planning projects that communities want to initiate that are beyond their financial means. Throughout the 1990s, DWSP, upon the request of a watershed town, would support a study or plan if finances were available. A critique of these efforts was that the funds were distributed on a first-come, first-serve basis and that some towns were not obtaining this financial support. The 1998 Watershed Protection Plan for Wachusett Reservoir and the 2000 Watershed Protection Plan for Quabbin Reservoir identified the need for a competitive program to distribute Technical Assistance contracts. Staff established a process that was implemented in FY2002, distributing over \$150,000 throughout the watershed system, including funding for Master Plans in Petersham and Shutesbury, as well as septic system site analyses in New Salem and Wendell. Unfortunately these funds were a casualty of subsequent budget restrictions. A relatively small amount of funding (\$16,000) was identified in FY2007 and was used to provide reference materials and training opportunities to town Planning Boards, Conservation Commissions, Building Inspectors, Zoning Boards of Appeals, and Boards of Health. Due to the success of this initiative, the Division will continue to utilize these funds, when available, for efforts that further support the work of local boards in their creation, interpretation, and implementation of laws that promote water quality protection.

By working with watershed area officials and citizens, DWSP can successfully find common ground on resource protection issues. These projects help both local resources and the Metropolitan Boston water supply. The technical assistance program emphasizes local source protection and its immediate impact to watershed residents and decision-makers. Through this cooperative approach, DWSP improves the land-use planning, control of development, and general environmental protection at the local level, which ultimately benefits drinking water source protection. It is, however, the town's responsibility to adopt and implement any plan or bylaw.

#### 5.1.2.3 Technical Assistance to Private Forest Landowners

In 1994, private forest lands on the Quabbin and Wachusett Reservoir watersheds and the Ware River watershed totaled in excess of 95,000 acres. In 1995, DWSP started its Private Lands Forestry Program to provide funding for private forestland owners to complete 10-year management plans for these forests, in an effort to forestall development of these parcels. Letters were sent to private consulting foresters informing them that clients whose properties fell within the water supply watersheds were eligible for 100% funding of the cost of producing management plans, using current requirements of the Forest Stewardship Program in order to secure Chapter 61 property tax abatement if they desired, or to access incentive funds available for practices.

Over the course of the 12 years that the program has functioned, the agency has provided \$63,058, with which we have enrolled a total of 5,323 acres in Stewardship and/or Chapter 61 for ten-year periods, at an average cost of \$12 per acre (or just over \$1 per acre per year). This acreage is divided among 71 parcels, with an average parcel size of 75 acres. **Table 36** shows how these acres are distributed by watershed.

**Table 36: Private Lands Forestry Assistance**

<b>Watershed</b>	<b># of Parcels</b>	<b># of Acres</b>	<b>Average Parcel Size</b>	<b>Total Cost</b>
Quabbin	22	2,170	99	\$25,697
Wachusett	35	2,275	65	\$26,908
Ware River	14	879	63	\$10,453
<b>TOTAL</b>	<b>71</b>	<b>5,323</b>	<b>75</b>	<b>\$63,058</b>

The Executive Office of Energy and Environmental Affairs identified this type of program as critical to

long-term protection of the Massachusetts landscape, and has subsequently dedicated funding to a comprehensive, statewide private forest lands program through the Massachusetts Forest Stewardship Program. To avoid redundancy, DWSP has suspended its own private lands assistance program.

### **5.1.3 Boundaries**

The total length of the boundary that encompasses DCR/DWSP holdings surrounding the Quabbin Reservoir is 160 miles, of which 4 miles abut private in-holdings and 8 miles abut the Shutesbury State Park in-holding. DWSP property boundaries are the “front line” of watershed protection, in that they are immediately adjacent to private land on which DWSP’s watershed protection principles may or may not be followed. The protection provided by boundaries is therefore enhanced by regular maintenance to keep them visible, and by immediate identification and resolution of encroachments.

#### **5.1.3.1 Maintenance of Boundaries**

Maintenance of DWSP boundaries is a straightforward but daunting task. Before maintaining boundaries, DWSP engineering and forestry staff must first determine their exact location in the field, accounting for recent land acquisition and its effects on the adjacent and outermost boundaries. Once accurately relocated, these boundaries are kept visible by the forestry staff on a regular 10 year cycle, primarily by clearing brush along the line and repainting blazes. This regular perambulation of the boundaries also serves to identify encroachments (see Section 5.1.3.2).

#### **5.1.3.2 Encroachment Discovery and Response**

Encroachment by abutters onto the Commonwealth’s properties has become a significant problem across DCR watersheds. This is due in part to development pressures, occasional unclear boundaries and a lack of monitoring and enforcement. Some of these encroachments are minor (e.g., mowing onto Commonwealth property), while others are quite significant (e.g., re-grading, landscaping, or placing structures directly on DCR property).

Most encroachments are discovered by field staff (civil engineers and foresters) while performing routine boundary marking or surveying of areas where boundary lines are unclear. Once an encroachment is identified, a series of letters and field inspections are required in order to ensure compliance with the actions recommended by DWSP. Through experience, the Division has determined that the best method for preventing new encroachments is by swift, effective, and fair resolution of those that are discovered. A small number of encroachments need to be resolved through court actions that require a great deal of additional police and DWSP staff time. DWSP strives whenever possible to resolve encroachments outside of the court.

#### **5.1.3.3 Cooperation with Abutters**

Division staff work hard to educate abutters about the agency’s objectives for watershed protection. As the largest landowner within the Quabbin watershed, it is extremely important for the Division to maintain a good relationship with abutters to DWSP property. Setting a good example of proper land stewardship for neighboring property owners may positively influence an owner’s actions on their own property. By having a good relationship with abutters, it is more likely that neighboring landowners would report unauthorized uses or encroachment problems that may occur on DWSP land.

Section 42 of Chapter 132 of Massachusetts General Laws, also known as the Forest Cutting Practices Act, includes the following requirement for notification of abutters:

Every owner of land who proposes to cut forest products on land devoted to forest purposes, or to cause such products to be cut, except as provided in section forty-four, shall send by certified mail or hand deliver written notice of his intention to begin any cutting operation to the abutters of record on file with the assessors of the town in which

the land lies, and whose closest boundary is within two hundred feet of the edge of the cutting area, at least ten days prior to operations

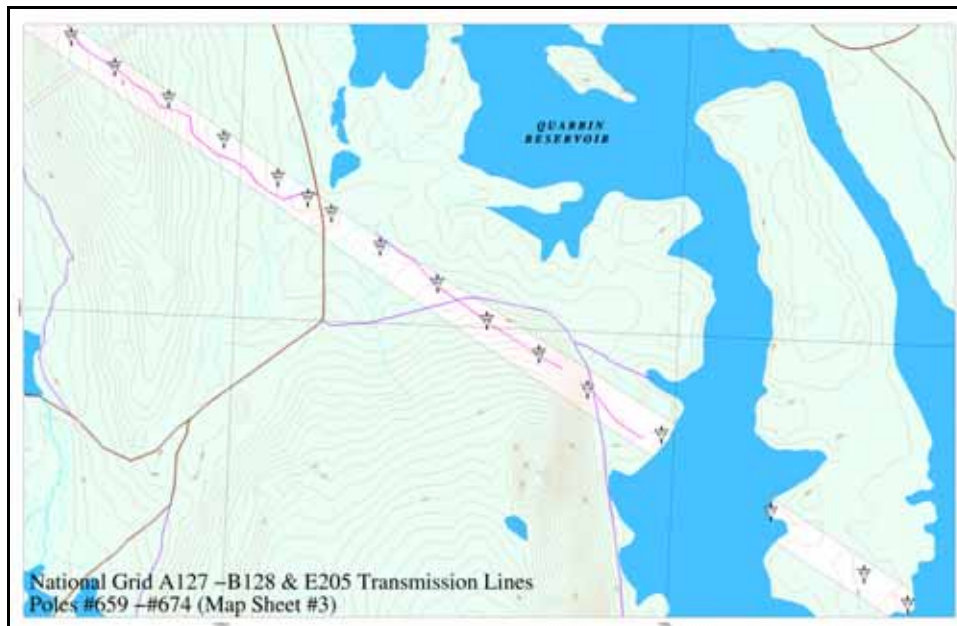
The majority of the DWSP properties at Quabbin are greater than 200 feet from adjacent, privately-held lands, so that notification is not required. However, the Division does notify abutters when harvesting on portions of the property that abut within 200 feet.

#### 5.1.3.4 Rights-of-Way

DCR maintains site-specific watershed protection controls within the approximately 289 acres of rights-of-way (ROW) of utilities, railways, and highways crossing the Quabbin Reservoir Watershed. These controls are designed to minimize risks to water quality associated with the maintenance and use of these corridors in the watershed. Power line ROW are typically vegetated and maintained in a constant state of early succession to prevent contact with the wires, which could cause possible disruption of service\*. In order to conduct this maintenance, utilities in Massachusetts are directed by 333 CMR 11.00, Rights-of-Way regulations administered by the Massachusetts Department of Agricultural Resources, to develop and submit for approval five year, Vegetative Management Plans (VMP) and Yearly Operational Plans (YOP).

As part of the approval process, DCR specifically reviews and comments on the planned activities to apply herbicides to control vegetation†. Resource identification (public surface water supplies) and associated “no spray” and limited zone delineation on maps and in the field is the focus on this review. A sample “T-sheet” that identifies the power line ROW in relation to the water resource appears below (**Figure 13**). These maps were developed by DCR staff to aid in the YOP review process prior to field visits. Monitoring is primarily targeted at buffer zone maintenance documentation and reporting. Over the past five years, DCR staff have also been contributing to the update of 333 CMR 11.00. The final version of these regulations was adopted in March, 2007.

**Figure 13: Sample “T-sheet” for Powerline ROW**



\* Powerlines in the eastern US have been found to constitute a potential reservoir of shrubland habitat for birds species that breed in early-successional shrubland habitats (King, 2002).

† Review was also conducted under 1997 MOU between DAR and MDC. This MOU was revoked by DAR on 12/6/06.

## **5.1.4 Public Education**

### **5.1.4.1 Role of DWSP Watershed Rangers in Land Protection**

The Division controls about 42% of a 257,000-acre watershed and reservoir system, which provides drinking water for nearly 2.2 million people. Public access to this system is determined by regulation and policy. Physical barriers such as gates help to prevent inappropriate uses throughout the watershed. For several decades prior to 1992, the Metropolitan Police, who had jurisdiction in any town that contained Division property, patrolled the watershed system. In 1992, the Metropolitan Police force was consolidated with the State Police and local police departments. A Memorandum of Understanding was established with the MA State Police to provide the same services to the Division watersheds that were carried out by the former Metropolitan Police. Following the consolidation, the MDC felt it would be prudent to create a limited ranger program to complement the efforts of the MA police, including rangers specifically assigned to watershed protection. MGL Ch. 92, s. 34b specifies the authority of these rangers:

The Metropolitan District Commission is hereby authorized to establish a park ranger program within the department to preserve, maintain and protect the parks, reservations, historic sites and open space and to ensure the environmental integrity of properties under the care, custody and control of the commission.

Within the Mission Statement of DCR Park Ranger Unit (which includes Watershed Rangers), four primary objectives are identified:

1. Resource Protection: Park Rangers will provide active and visible uniformed patrols of DCR properties and facilities in an effort to discourage improper use and criminal activity. Park Rangers issue verbal or written warnings and non-criminal citations to individuals who violate DCR Rules and Regulations and contact the MA State Police to address criminal activity.
2. Visitor Services: Park Rangers will assist visitors to DCR properties by providing them with information as requested, rendering emergency service when necessary, and promoting educational and recreational opportunities through various programs and activities.
3. Education and Community Relations: Park Rangers will encourage appreciation and proper use of DCR resources through various outreach programs. This includes maintaining an active working relationship with park visitors, user/friends groups and the owners of private properties abutting DCR lands.
4. Reservation and Historic Site Management: Park Rangers will assist in proper maintenance and protection of properties and facilities by implementing measures for damage prevention, conducting routine on-site inspections, promptly reporting and documenting maintenance problems, and taking and documenting corrective action.

The primary function of the Division's Watershed Rangers is to protect drinking water resources by conducting regularly-scheduled patrols of the watersheds. Watershed Rangers provide a visual, uniformed presence on Division lands and pro-actively patrol to help prevent problems, such as vandalism, inappropriate recreation uses, illegal dumping and accidents within the watershed that may degrade water, forest, wildlife and/or cultural resources. The Rangers rely on rules education rather than enforcement to seek compliance. Rangers do not have law enforcement powers. When situations occur that require law enforcement personnel, Watershed Rangers communicate these to the State Police and other enforcement agencies. In addition, the MA Environmental Police provide rules enforcement for complementary state wide environmental regulations. Watershed Rangers are in radio contact with both the EPOs and State police and meet systematically with both these groups. These relationships are critical to the enforcement of DCR regulations.

Since 1999, DCR Watershed Rangers have kept records of their access rule enforcement interventions. **Table 37** shows the total rules interventions by type from 1999-2005.

Watershed Rangers are “good will ambassadors” and not only show a positive presence but also speak on behalf of the agency and the Division about proper watershed stewardship and drinking water protection to community or other organization gatherings, children, school groups, service organizations, senior groups, etc. Through their positive interaction with visitors, rangers protect these open spaces and encourage all people to do the same by obeying all watershed rules and regulations for specific Division reservoirs and the system as a whole.

Watershed Rangers provide security for Division facilities and other designated buildings, and regularly monitor potential trouble spots on the watershed. Special use and group permits may be checked by Rangers to ensure that permittees are in compliance with their permit. Rangers keep a daily log of their patrolling activities. Incidents are documented and are referred to the appropriate authorities. Rangers also aid in placement of signage on Division lands throughout the watershed, to assure the public has ample opportunity to become informed about access regulations.

Since 1996, the number of Rangers assigned to the Quabbin/Ware River watersheds has grown from one to seven. Ranger patrols include pro-active surveillance of DCR/DWSP-owned lands with emphasis on popular access locations around the Quabbin watershed. Rangers monitor and report on the condition of trails and signs, ice conditions, and illegal activities such as dumping of trash and debris, illegal vehicle use, fires, swimming, and removal of natural or cultural resources. In addition, Watershed Rangers are trained as emergency first responders and have undertaken ice rescue training.

**Table 37: Quabbin Watershed Ranger Interventions, 1999-2005**

<b>Intervention Type</b>	<b>Number of Rule Interventions</b>
Domestic Animals	919
Trespass	896
Bike/Sled/Ski	215
Swim/Wade	161
Boating	122
Fishing	98
Snowmobiles/ATV/M.V.	61
Cooking/Fires	51
Vandalism	47
Dumping/Littering	47
Alcohol	38
Metal Detecting	15
Permit Violations	15
Collecting	14
Firearms/Target Shooting	3
Disorderly Conduct	2
Harassment/Breach of Peace	3
Non-compliance	1
Feeding Wildlife	1
Parasailing/Aircraft Landing	2

Source: OWM Watershed Rangers, 2005

#### **5.1.4.2 Interpreting Land Protection/Management Priorities**

Public education is a vital component of the Division's watershed management and protection programs. The Division strives to directly communicate not only what the access rules and regulations are and why they are necessary, but also what the land protection and management priorities are and how and why these are implemented. To this end, different sections work on different fronts of public education and interpretative services. The Watershed Rangers speak informally with users while patrolling property. The Quabbin Visitor Center Staff conduct school programs for students within watershed communities, maintain the Quabbin Visitor Center and related programs. In addition, the Forestry and Natural Resources staffs regularly provide field tours to academic institutions from around the world who are interested in the application of watershed forest management principles on the Quabbin watershed.

#### **5.1.5 Fire Protection**

DCR DWSP is committed to protecting the watershed forest, as well as watershed visitors, from the impacts of forest fires. While light burns in forest areas without forest regeneration cause little harm, hotter fires, especially in areas with younger forests, can cause serious impacts including death of both understory and overstory trees and exposure of mineral soil over large areas, causing an increased potential for overland flow, erosion, and nutrient loading. Two fires in the 1950s at Quabbin (one north of Route 122 and one on the Prescott Peninsula) were of this nature, killing significant areas of understory and overstory vegetation. All fires can endanger the visiting public and adjacent landowners.

Forest fire frequency over the last decade has decreased to approximately 2 to 3 incidents per year and these have all been <10 acres in size. Nearly all recent wildfires at Quabbin have been caused by the visiting public and were associated with illegal campfires or improper disposal of smoking materials. DCR/DWSP has implemented the recommendations of the 1986 Forest and Wildlife Management Plan, including:

- Strictly enforcing the prohibition against landing of boats on islands and the shoreline of the reservoir.
- Eliminating all public access to the Reservation during times of extreme fire danger conditions.

Through increased education and enforcement efforts, DCR/DWSP has reduced the number of illegal boat landings. A water protection policy was initiated which set up designated landing areas with portable toilet facilities. This action resulted in less beaching of boats in unauthorized areas and allowed for much better control of the visiting public.

DCR DWSP did close the watershed to public access during a brief period in October, 1984 due to extreme fire danger conditions. In a March, 1994 meeting between the then DEM and MDC, it was agreed that during periods of extreme fire danger, the two agencies would cooperate to provide trained personnel to keep fire watch from the tower at Mt. Grace in Warwick State Park. This site provides an excellent view of Quabbin and is best situated for triangulation with the Pelham and Princeton towers. [The 2003 merger of MDC and DEM into DCR resulted in two forestry related sections within the same agency. DWSP's foresters are solely responsible for watershed management lands, while the Bureau of Forestry serves both public and private lands, including the oversight of fire control.]

Other recommendations of the 1986 Quabbin Forest and Wildlife Management Plan which have been implemented include:

- Improve cooperation with local fire departments.
- Improve forest road conditions in areas of poor access and high fire hazard and risk.

- Implement a fire watch during extreme fire situations.

Due to the decrease in incidents, increased cooperation with area fire personnel and the relatively wet fire seasons experienced over the last decade, the recommendation “Training of Division staff in fire suppression” has been modified to include training in the Incident Command System (ICS) and in hazardous materials spill and boom deployment. Hazardous spills pose a greater risk to the water supply and it has been determined that this is a better use of limited training time.

Since 1986, the Division has made measurable improvements in many of the above areas. A fire policy was drafted in 1987 and has been improved and updated as recently as June, 2006. This policy specifically outlines the steps necessary for suppression of wildfires on DCR lands.

Through constant communication with town fire departments and DCR’s Bureau of Forestry fire control personnel, the Division has improved the coordination of fire suppression. Effective coordination with local fire departments is critical as the local Fire Chief is the person legally in charge of a fire fighting operation. DCR/DWSP’s role is to assist the local fire department and to assume responsibility only at the direction of the local fire chief (usually for “mop up” operations). The addition of a radio system at Quabbin that is linked to DCR Bureau of Forestry fire control personnel has greatly improved communications during wildfires.

Extensive progress has been made in the repair and maintenance of the forest road system at Quabbin over the years. This has improved access to most areas of the watershed (see next section for detailed report on roads). The Division has also acquired fire fighting apparatus that improves its readiness in fighting fires.

During the management period from 2006-2015, DWSP will develop a communication plan that addresses the inter-operability of the DCR radio system with local and state agencies. This plan will be part of the larger emergency operations plan being developed for the section.

The DWSP will also finalize the Watershed Emergency Access Map that highlights road intersections, boat launching sites, and helipads. This map will be distributed to local and state Police, Fire, EMS, Underwater rescue, and hazmat units which may respond to an incident on the watershed.

### ***5.1.6 Security and Emergency Planning***

The terrorist attacks of September 11, 2001 forced all public water suppliers to focus their attention on the security of the water supply. Security of the water system must be comprehensive – source to tap – but flexible enough to adjust to a range of potential threat conditions. The Division’s policies are periodically reviewed in order to achieve the goal of providing a safe and secure water supply system.

Following “9/11”, the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Bioterrorism Act) was passed into Federal Law (PL 107-188). Section 401 of that act amended the Safe Drinking Water Act (SDWA) by adding section 1433(a), which requires all community public water systems (including military installations) serving 3,300 people or more to conduct Vulnerability Assessments (VAs), certify to EPA that the VAs were conducted, and submit a copy of the VA to EPA. The DWSP worked with the MWRA to complete a VA for the water supply systems under its care. This VA was completed and submitted to US EPA for the entire water system on September 30, 2003.

As a result of this Vulnerability Assessment, the Division implemented short-term and long-term changes to its land management practices, as follows:

Short-term land management changes included:

- Closing public access to the Winsor Dam and other critical assets.
- Placing Jersey barriers across roadways with temporary fencing around potentially vulnerable areas.
- Blocking utility right-of-way access routes to unauthorized motor vehicles.
- Staffing check points by MA National Guards and MA State Police at main entrance points and Gate 17, and requiring staff id and other forms of identification.
- Suspending forestry and research access temporarily, while procedures were established for improving security checks on permit holders.
- Temporarily suspending access to fishing areas and other recreational use areas while the potential threat associated with these areas was evaluated.

Long-term land management changes included:

- Closing vehicle access to the Winsor Dam and Goodnough Dike.
- Prohibiting general public access around CVA Intake and Shaft 12 buildings including new fencing, locks, and signage.
- Enhancing Watershed Ranger patrols throughout the watershed.
- Requiring background checks for all research permits.
- Improving gate management, including numbering, inventory, and physical modifications to gates.
- Establishing an access management system with permits.

DWSP will continue to develop and refine its approach toward domestic incident management to prevent, prepare for, respond to, and recover from terrorist attacks, major disasters, and other emergencies.